

SEQUENCE LISTING

<110> Gu, Wei <120> NOVEL G-PROTEIN COUPLED RECEPTORS AND USES THEREFOR <130> MNI-080CP <140> <141> <150> 09/556,588 <151> 2000-05-08 <150> 60/132,896 <151> 1999-05-06 <160> 12 <170> PatentIn Ver. 2.0 <210> 1 <211> 3637 Ç <212> DNA <213> Mus musculus 1 . . <220> <221> CDS LT <222> (222)..(3122) ١D M <220> <221> misc_feature 3: <222> (3554) <223> n = any nucleotide gtcgacccac gcgtccgcac tcaacaatgc ctgcccctct ctgactgcac cgtcccgccg 60 ccgctgccgc cgccgcgccc aagccaagtc gagcgggggc gttgcccacc gacggcacag 120 cccttgggcc cgcccgggac caggaggtga gccgcgcgcg cacagctccg tgcgctcgcc 180 cgtctgagcg cccgccaggt gccccgcagc ccgccgccga g atg cac agc ccg cct 236 1 ggg ctc ctg gcg ctg tgg ctt tgc gct gtg ctg tgc gca tcg gcg cgc Gly Leu Leu Ala Leu Trp Leu Cys Ala Val Leu Cys Ala Ser Ala Arg 10 ggg ggc agc gac cec cag cct ggc ccg ggg cgt ccc gcc tgc ccg gct Gly Gly Ser Asp Pro Gln Pro Gly Pro Gly Arg Pro Ala Cys Pro Ala 25 ecc tgc cac tgc cag gag gac ggc atc atg ctg tcc gct gac tgc tcc 380 Pro Cys His Cys Gln Glu Asp Gly Ile Met Leu Ser Ala Asp Cys Ser 45 40



gag ctc ggg ctc tca gtg gtg cct gcg gac ctg gac ccc ctg acg gct 428 Glu Leu Gly Leu Ser Val Val Pro Ala Asp Leu Asp Pro Leu Thr Ala 60 65	
tac cta gac ctc agt atg aac aac ctc acg gag ctt cag ccg ggt ctc 476 Tyr Leu Asp Leu Ser Met Asn Asn Leu Thr Glu Leu Gln Pro Gly Leu 85	
ttc cac cac ctg cgc ttc ctg gag gag ctg cgg ctc tca ggg aac cac 524 ttc cac cac ctg cgc ttc ctg gag gag ctg cgg ctc tca ggg aac cac 524 Phe His His Leu Arg Phe Leu Glu Glu Leu Arg Leu Ser Gly Asn His 90 95	
ctc tca cac atc ccg gga cag gca ttc tcc ggc ctc cac agc ctc aaa 572 Leu Ser His Ile Pro Gly Gln Ala Phe Ser Gly Leu His Ser Leu Lys	
att cta atg ctg cag agc aac cag ctc cgt ggg atc cca gca gag gca 620 Ile Leu Met Leu Gln Ser Asn Gln Leu Arg Gly Ile Pro Ala Glu Ala 120 125	
cta tgg gag ctg ccc agc ctg cag tcg ctg cgc cta gat gct aat ctc 668 Leu Trp Glu Leu Pro Ser Leu Gln Ser Leu Arg Leu Asp Ala Asn Leu 145	
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cac ctc tgg ctg gat gac aat gca ctc act gag atc ccc gtc aga gct 764 His Leu Trp Leu Asp Asp Asn Ala Leu Thr Glu Ile Pro Val Arg Ala 170 170	:
ctc aac aac ctt cct gcc cta cag gcc atg acc ttg gct ctc aac cat 81: Leu Asn Asn Leu Pro Ala Leu Gln Ala Met Thr Leu Ala Leu Asn His 195 185	2
atc cgc cac atc cct gac tat gcc ttc cag aac ctc acc agt ctt gtg 86 Ile Arg His Ile Pro Asp Tyr Ala Phe Gln Asn Leu Thr Ser Leu Val	0
gtg ctg cat cta cat aac aac cgc atc cag cat gtg ggg acc cac agc 90 Yal Leu His Leu His Asn Asn Arg Ile Gln His Val Gly Thr His Ser 220 225	8
ttc gag ggg ctg cac aat ctg gag aca cta gac ctg aac tat aat gag 99 ttc gag ggg ctg cac aat ctg gag aca cta gac ctg aac tat aat gag 99 ttc gag ggg ctg cac aat ctg gag aca cta gac ctg aac tat aat gag 99 phe Glu Gly Leu His Asn Leu Glu Thr Leu Asp Leu Asn Tyr Asn Glu 245	56
ctg cag gag ttc ccc ttg gct atc cgg acc ctg ggc agg ctg cag gaa 1 ctg cag gag ttc ccc ttg gct atc cgg acc ctg ggc agg ctg cag gaa 1 Leu Gln Glu Phe Pro Leu Ala Ile Arg Thr Leu Gly Arg Leu Gln Glu 250 255 260	004
	L052



atg ggc aac cct ctc ctg cag aca ata cat ttt tat gac aac cca atc Met Gly Asn Pro Leu Leu Gln Thr Ile His Phe Tyr Asp Asn Pro Ile 290 280
cag ttt gtg gga agg tca gca ttc cag tac ctg tct aaa ctg cat acg 1148 Gln Phe Val Gly Arg Ser Ala Phe Gln Tyr Leu Ser Lys Leu His Thr 305
cta tct ttg aat ggt gcc act gat atc caa gag ttc cca gac ctc aaa 1196 Leu Ser Leu Asn Gly Ala Thr Asp Ile Gln Glu Phe Pro Asp Leu Lys 325 315
ggc acc act agc ctg gag atc ctg acc ctg acc cgt gcg ggc atc aga 1244 Gly Thr Thr Ser Leu Glu Ile Leu Thr Leu Thr Arg Ala Gly Ile Arg 340 330
ctg ctc cca ccg gga gtg tgc caa cag ctg cct agg ctc cga atc ctg 1292 Leu Leu Pro Pro Gly Val Cys Gln Gln Leu Pro Arg Leu Arg Ile Leu 355 345
gag ctg tct cat aat cag atc gag gag tta ccc agc ctg cac aga tgt 1340 Glu Leu Ser His Asn Gln Ile Glu Glu Leu Pro Ser Leu His Arg Cys 365
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ggt gca gat acc ttc agc cag ctg ggc tcc ttg caa gct tta gac ctg 1436 Gly Ala Asp Thr Phe Ser Gln Leu Gly Ser Leu Gln Ala Leu Asp Leu 405
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cga tcc ttg gtt aag ctg gac ctg act gac aac cag ctg acc aca ctg 1532 Arg Ser Leu Val Lys Leu Asp Leu Thr Asp Asn Gln Leu Thr Thr Leu 430 435
ccc ctg gct ggg ctg gga ggc ctg atg cac ctg aag ctc aaa ggg aac 1580 Pro Leu Ala Gly Leu Gly Gly Leu Met His Leu Lys Leu Lys Gly Asn 455
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gcc agc ttc ttc aag acc tct ggg cag tgg cag gcc gag gac ttt cat 1724 gcc agc ttc ttc aag acc tct ggg cag tgg cag gcc gag gac ttt cat 1724 Ala Ser Phe Phe Lys Thr Ser Gly Gln Trp Gln Ala Glu Asp Phe His Ala Ser Phe Phe Lys Thr Ser Gly Gln 495
490 cca gaa gaa gag gca cca aag agg ccc ctg ggt ctc ctt gct gga 1772



Pro Glu Glu Glu Ala Pro Lys Arg Pro Leu Gly Leu Leu Ala Gly 515
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aca gag gac tca aag cca aac ccc agt gtc cag tgc agc cct gtt cca 1868 Thr Glu Asp Ser Lys Pro Asn Pro Ser Val Gln Cys Ser Pro Val Pro 535 540 545
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ctt gct gtg tgg gcc atc gtg ctg ctc tcc gta ctc tgt aac ggg ctg 1964 Leu Ala Val Trp Ala Ile Val Leu Leu Ser Val Leu Cys Asn Gly Leu 570 570 570
gtg ctg ctg aca gtc ttt gcc agc gga ccc agc ccg ctg tcc ccc gtc 2012 Val Leu Leu Thr Val Phe Ala Ser Gly Pro Ser Pro Leu Ser Pro Val 595
aag ctt gtg gtg ggt gcg atg gca ggc gcc aac gcc ctg acg ggc att 2060 Lys Leu Val Val Gly Ala Met Ala Gly Ala Asn Ala Leu Thr Gly Ile 600 605
tcc tgt ggt ctc ctg gcc tct gtg gac gcc ttg acc tat ggt cag ttc 2108 Ser Cys Gly Leu Leu Ala Ser Val Asp Ala Leu Thr Tyr Gly Gln Phe 625 615
gct gag tat gga gcc cgc tgg gag agc ggt ctg ggc tgc cag gct acg 2156 Ala Glu Tyr Gly Ala Arg Trp Glu Ser Gly Leu Gly Cys Gln Ala Thr 645 630 635
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cgg ccg gcc gcc ctg ggc ttc gct gta gcc ctg gtg atg atg aac tcg 2444 Arg Pro Ala Ala Leu Gly Phe Ala Val Ala Leu Val Met Met Asn Ser



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cac gtg gcc tgg ctc atc ttt gca gat ggc ctc ctc tac tgc ccc gtg 2588 His Val Ala Trp Leu Ile Phe Ala Asp Gly Leu Leu Tyr Cys Pro Val 775 780 785	
gcc ttc ctc agc ttt gcc tcc atg ctg ggc ctc ttc cct gtc acc ccc 2636 Ala Phe Leu Ser Phe Ala Ser Met Leu Gly Leu Phe Pro Val Thr Pro 800 805 790	
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atc tcc cga cat cag ccg ggg gcc acc agg ctg gag gga aac cat ttt 2972 Ile Ser Arg His Gln Pro Gly Ala Thr Arg Leu Glu Gly Asn His Phe 915 905	
ata gag tct gat gga acc aag ttt ggg aac cca caa cct ccc atg aag 3020 Ile Glu Ser Asp Gly Thr Lys Phe Gly Asn Pro Gln Pro Pro Met Lys 920 925 930	
gga gaa ctg ctg ctg aag gca gag gga gcc act ttg gca ggc tgt ggc 3068 Gly Glu Leu Leu Lys Ala Glu Gly Ala Thr Leu Ala Gly Cys Gly 945	
tot too gtg ggt gga gcc oto tgg coo tot ggo tot oto ttt gcc tot 3116 Ser Ser Val Gly Gly Ala Leu Trp Pro Ser Gly Ser Leu Phe Ala Ser 960 965 950	;

ļ:±



cac ttg taaatateee tetetgtttg teeteteeee atecaatgat ggetgettat His Leu aaaagaaaga caactccaac tccatagcaa gatggccaac acctctgact ccattgttct 3232 ctctccacga cccctaacca atgagtgctt ccaagtcttg ctttgtcttg gccttcagct 3292 tcactttcac cctgggcctt ctctgtccaa tccaatactt ctgacagagg cctgggaaat 3352 ttgcatagga gaaaggagaa aagcaaaaga cagtgaaggt tattgggccc tgacagagcc 3412 atgatcagta agtgcagagt gatggggagg tctcacagag catgacactg gaagacaact 3472 accaaagaca ttggagagtc tcccctgtga catatagaat ataaaatgtg ttctgcgttc 3532 cattaatctt gacctatgct gngccaaagt gcttcctgtt aaaatacact ttggaagaca 3592 3637 ttgaaaaaaa aaaaaaaaa aaaaaaaaa aaaaagggcg gccgc

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Ser Ala Asp Cys Ser Glu Leu Gly Leu Ser Val Val Pro Ala Asp Leu

Asp Pro Leu Thr Ala Tyr Leu Asp Leu Ser Met Asn Asn Leu Thr Glu

Leu Gln Pro Gly Leu Phe His His Leu Arg Phe Leu Glu Glu Leu Arg

Leu Ser Gly Asn His Leu Ser His Ile Pro Gly Gln Ala Phe Ser Gly

Leu His Ser Leu Lys Ile Leu Met Leu Gln Ser Asn Gln Leu Arg Gly 120

Ile Pro Ala Glu Ala Leu Trp Glu Leu Pro Ser Leu Gln Ser Leu Arg 130

Leu Asp Ala Asn Leu Ile Ser Leu Val Pro Glu Arg Ser Phe Glu Gly 150 145



Leu	Ser	Ser	Leu	Arg 165	His	Leu	Trp	Leu	Asp 170	Asp	Asn	Ala	Leu	Thr 175	Glu
				100											Thr

Ile Pro Val Arg Ala Leu Asn Asn Leu Pro Ala Leu Gln Ala Met Thr 180 185

Leu Ala Leu Asn His Ile Arg His Ile Pro Asp Tyr Ala Phe Gln Asn 195

Leu Thr Ser Leu Val Val Leu His Leu His Asn Asn Arg Ile Gln His 210 220

Val Gly Thr His Ser Phe Glu Gly Leu His Asn Leu Glu Thr Leu Asp 235

Leu Asn Tyr Asn Glu Leu Gln Glu Phe Pro Leu Ala Ile Arg Thr Leu 255

Gly Arg Leu Gln Glu Leu Gly Phe His Asn Asn Asn Ile Lys Ala Ile 265 270

Pro Glu Lys Ala Phe Met Gly Asn Pro Leu Leu Gln Thr Ile His Phe 275 280 285

Tyr Asp Asn Pro Ile Gln Phe Val Gly Arg Ser Ala Phe Gln Tyr Leu 290 295

Ser Lys Leu His Thr Leu Ser Leu Asn Gly Ala Thr Asp Ile Gln Glu 305

Phe Pro Asp Leu Lys Gly Thr Thr Ser Leu Glu Ile Leu Thr Leu Thr 335

Arg Ala Gly Ile Arg Leu Leu Pro Pro Gly Val Cys Gln Gln Leu Pro 345

Arg Leu Arg Ile Leu Glu Leu Ser His Asn Gln Ile Glu Glu Leu Pro 355 360 365

Ser Leu His Arg Cys Gln Lys Leu Glu Glu Ile Gly Leu Arg His Asn 370

Arg Ile Lys Glu Ile Gly Ala Asp Thr Phe Ser Gln Leu Gly Ser Leu 395 400

Gln Ala Leu Asp Leu Ser Trp Asn Ala Ile Arg Ala Ile His Pro Glu 410 415

Ala Phe Ser Thr Leu Arg Ser Leu Val Lys Leu Asp Leu Thr Asp Asn 420 425

Gln Leu Thr Thr Leu Pro Leu Ala Gly Leu Gly Gly Leu Met His Leu 435

Lys Leu Lys Gly Asn Leu Ala Leu Ser Gln Ala Phe Ser Lys Asp Ser 450



Phe Pro Lys Leu Arg Ile Leu Glu Val Pro Tyr Ala Tyr Gln Cys Cys 475

Ala Tyr Gly Ile Cys Ala Ser Phe Phe Lys Thr Ser Gly Gln Trp Gln
495

Ala Glu Asp Phe His Pro Glu Glu Glu Glu Ala Pro Lys Arg Pro Leu 500 505

Gly Leu Leu Ala Gly Gln Ala Glu Asn His Tyr Asp Leu Asp Leu Asp 525

Glu Leu Gln Met Gly Thr Glu Asp Ser Lys Pro Asn Pro Ser Val Gln 530

Cys Ser Pro Val Pro Gly Pro Phe Lys Pro Cys Glu His Leu Phe Glu 545

Ser Trp Gly Ile Arg Leu Ala Val Trp Ala Ile Val Leu Leu Ser Val 575

Leu Cys Asn Gly Leu Val Leu Leu Thr Val Phe Ala Ser Gly Pro Ser 580

Pro Leu Ser Pro Val Lys Leu Val Val Gly Ala Met Ala Gly Ala Asn 595 600 605

Ala Leu Thr Gly Ile Ser Cys Gly Leu Leu Ala Ser Val Asp Ala Leu 610 615 620

Thr Tyr Gly Gln Phe Ala Glu Tyr Gly Ala Arg Trp Glu Ser Gly Leu 635 640

Gly Cys Gln Ala Thr Gly Phe Leu Ala Val Leu Gly Ser Glu Ala Ser 645 650 655

Val Leu Leu Thr Leu Ala Ala Val Gln Cys Ser Ile Ser Val Thr 660 665

Cys Val Arg Ala Tyr Gly Lys Ala Pro Ser Pro Gly Ser Val Arg Ala 675 680 685

Gly Ala Leu Gly Cys Leu Ala Leu Ala Gly Leu Ala Ala Leu Pro 690 695 700

Leu Ala Ser Val Gly Glu Tyr Gly Ala Ser Pro Leu Cys Leu Pro Tyr 715 720

Ala Pro Pro Glu Gly Arg Pro Ala Ala Leu Gly Phe Ala Val Ala Leu 735

Val Met Met Asn Ser Leu Cys Phe Leu Val Val Ala Gly Ala Tyr Ile 740

Lys Leu Tyr Cys Asp Leu Pro Arg Gly Asp Phe Glu Ala Val Trp Asp 755 760 765

Cys Ala Met Val Arg His Val Ala Trp Leu Ile Phe Ala Asp Gly Leu 775 770 Leu Tyr Cys Pro Val Ala Phe Leu Ser Phe Ala Ser Met Leu Gly Leu 790 Phe Pro Val Thr Pro Glu Ala Val Lys Ser Val Leu Leu Val Val Leu 805 Pro Leu Pro Ala Cys Leu Asn Pro Leu Leu Tyr Leu Leu Phe Asn Pro 820 His Phe Arg Asp Asp Leu Arg Arg Leu Trp Pro Ser Pro Arg Ser Pro 840 Gly Pro Leu Ala Tyr Ala Ala Gly Glu Leu Glu Lys Ser Ser Cys Asp Ser Thr Gln Ala Leu Val Ala Phe Ser Asp Val Asp Leu Ile Leu 865 Glu Ala Ser Glu Ala Gly Gln Pro Pro Gly Leu Glu Thr Tyr Gly Phe 885 Pro Ser Val Thr Leu Ile Ser Arg His Gln Pro Gly Ala Thr Arg Leu 900 Glu Gly Asn His Phe Ile Glu Ser Asp Gly Thr Lys Phe Gly Asn Pro Gln Pro Pro Met Lys Gly Glu Leu Leu Leu Lys Ala Glu Gly Ala Thr 935 930 Leu Ala Gly Cys Gly Ser Ser Val Gly Gly Ala Leu Trp Pro Ser Gly 950 Ser Leu Phe Ala Ser His Leu 965 <210> 3 <211> 2901 <212> DNA <213> Mus musculus <220> <221> CDS <222> (1)..(2901) atg cac agc ccg cct ggg ctc ctg gcg ctg tgg ctt tgc gct gtg ctg <400> 3 Met His Ser Pro Pro Gly Leu Leu Ala Leu Trp Leu Cys Ala Val Leu 1 tgc gca tcg gcg cgc ggg ggc agc gac ccc cag cct ggc ccg ggg cgt Cys Ala Ser Ala Arg Gly Gly Ser Asp Pro Gln Pro Gly Pro Gly Arg



ccc gcc tgc ccg gct ccc tgc cac tgc cag gag gac ggc atc atg ctg 144 Pro Ala Cys Pro Ala Pro Cys His Cys Gln Glu Asp Gly Ile Met Leu 45
tcc gct gac tgc tcc gag ctc ggg ctc tca gtg gtg cct gcg gac ctg 192 Ser Ala Asp Cys Ser Glu Leu Gly Leu Ser Val Val Pro Ala Asp Leu 50 50
gac ccc ctg acg gct tac cta gac ctc agt atg aac aac ctc acg gag 240 Asp Pro Leu Thr Ala Tyr Leu Asp Leu Ser Met Asn Asn Leu Thr Glu 75 80
ctt cag ccg ggt ctc ttc cac cac ctg cgc ttc ctg gag gag ctg cgg 288 Leu Gln Pro Gly Leu Phe His His Leu Arg Phe Leu Glu Glu Leu Arg 95 90 95
ctc tca ggg aac cac ctc tca cac atc ccg gga cag gca ttc tcc ggc 336 Leu Ser Gly Asn His Leu Ser His Ile Pro Gly Gln Ala Phe Ser Gly 100 105
ctc cac agc ctc aaa att cta atg ctg cag agc aac cag ctc cgt ggg 384 Leu His Ser Leu Lys Ile Leu Met Leu Gln Ser Asn Gln Leu Arg Gly 120 125
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cgt gcg ggc atc aga ctg ctc cca ccg gga gtg tgc caa cag ctg cct 1056 Arg Ala Gly Ile Arg Leu Leu Pro Pro Gly Val Cys Gln Gln Leu Pro 340 345
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agg atc aag gaa att ggt gca gat acc ttc agc cag ctg ggc tcc ttg 1200 Arg Ile Lys Glu Ile Gly Ala Asp Thr Phe Ser Gln Leu Gly Ser Leu 395 400
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ttc cca aaa ctg agg atc ctg gag gtg ccc tac gcc tac cag tgc tgt 1440 Phe Pro Lys Leu Arg Ile Leu Glu Val Pro Tyr Ala Tyr Gln Cys Cys 470 470 480
gcc tac ggc atc tgt gcc agc ttc ttc aag acc tct ggg cag tgg cag 1488

- 12 -
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gag ctc cag atg ggg aca gag gac tca aag cca aac ccc agt gtc cag 1632 Glu Leu Gln Met Gly Thr Glu Asp Ser Lys Pro Asn Pro Ser Val Gln 530 540
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ccg ctg tcc ccc gtc aag ctt gtg gtg ggt gcg atg gca ggc gcc aac 1824 Pro Leu Ser Pro Val Lys Leu Val Val Gly Ala Met Ala Gly Ala Asn 605 600
gcc ctg acg ggc att tcc tgt ggt ctc ctg gcc tct gtg gac gcc ttg 1872 Ala Leu Thr Gly Ile Ser Cys Gly Leu Leu Ala Ser Val Asp Ala Leu 610 610
acc tat ggt cag ttc gct gag tat gga gcc cgc tgg gag agc ggt ctg 1920 Thr Tyr Gly Gln Phe Ala Glu Tyr Gly Ala Arg Trp Glu Ser Gly Leu 630 636
ggc tgc cag gct acg ggc ttc ctg gct gtc ctg ggt tca gag gcg tcg 1968 Gly Cys Gln Ala Thr Gly Phe Leu Ala Val Leu Gly Ser Glu Ala Ser 655 645
gtg ctg ctc aca ctg gcg gcc gtg cag tgc agc atc tct gtg acc 2016 Val Leu Leu Thr Leu Ala Ala Val Gln Cys Ser Ile Ser Val Thr 660 665 670
tgc gtc cga gcc tac ggg aag gcg ccg tcg cct ggc agc gtc cgc gca 2064 Cys Val Arg Ala Tyr Gly Lys Ala Pro Ser Pro Gly Ser Val Arg Ala 685 675
ggc gca ctg gga tgc ctg gcg ctg gcc ggg ctg gcc gca gca ctg ccg 2112 Gly Ala Leu Gly Cys Leu Ala Leu Ala Gly Leu Ala Ala Leu Pro 690 690
ctg gcc tcg gtg gga gag tat ggc gcc tcc cca ctc tgc ctg ccc tac 2160 Leu Ala Ser Val Gly Glu Tyr Gly Ala Ser Pro Leu Cys Leu Pro Tyr



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715	720
gcc cca ccc gag ggc cgg ccg gcc gcc ctg ggc ttc gct gta gc. Ala Pro Pro Glu Gly Arg Pro Ala Ala Leu Gly Phe Ala Val Al 725	c ctg 2208 a Leu 5
gtg atg atg aac tcg ctc tgc ttc ctg gtg gtg gcc ggc gcc ta Val Met Met Asn Ser Leu Cys Phe Leu Val Val Ala Gly Ala Ty 740 740	c atc 2256
aag ctc tac tgt gac ctg cca cgg ggt gac ttt gag gcc gtg tg Lys Leu Tyr Cys Asp Leu Pro Arg Gly Asp Phe Glu Ala Val Ti 760	gg gac 2304 rp Asp
tgc gcc atg gtg cgc cac gtg gcc tgg ctc atc ttt gca gat g Cys Ala Met Val Arg His Val Ala Trp Leu Ile Phe Ala Asp G	gc ctc 2352 ly Leu
ctc tac tgc ccc gtg gcc ttc ctc agc ttt gcc tcc atg ctg gcc ttc tac tgc ccc gtg gcc ttc ctc agc ttt gcc tcc atg ctg gcc ttc tac tgc ccc atg ctg gcc ttc ctc agc ttt gcc tcc atg ctg gcc ttc tac tgc ccc atg ctg gcc ttc ctc agc ttt gcc tcc atg ctg gcc ttc tac tgc tcc atg ctg gcc ttc tac tgc tcc atg ctg gcc ttc agc ttt gcc tcc atg ctg gcc tcc atg ctg gcc tcc atg ctg gcc tcc atg ctg gcc ttc ctc agc ttt gcc tcc atg ctg gcc ttc ctc agc ttt gcc tcc atg ctg gcc ttc ctc agc ttt gcc tcc atg ctg gcc ttc ctc agc ttt gcc tcc atg ctg gcc ttc ctc agc ttt gcc tcc atg ctg gcc ttc ctc agc ttt gcc tcc atg ctg gcc ttc ctc agc ttt gcc tcc atg ctg gcc ttc ctc agc ttt gcc tcc atg ctg gcc ttc ctc agc ttt gcc tcc atg ctg gcc ttc atg ct	gc ctc 2400 Bly Leu 800
ttc cct gtc acc ccc gag gct gtc aag tca gtc ctt ctg gtg g the Pro Val Thr Pro Glu Ala Val Lys Ser Val Leu Leu Val V 805	gtg ctg 2448
cct ctg cct gcc tgc ctc aac cca ctg ctc tac ctg ctc ttc Pro Leu Pro Ala Cys Leu Asn Pro Leu Leu Tyr Leu Leu Phe	aac cct 2496 Asn Pro
cac ttc cgg gat gac ctt cgg cgg ctc tgg cca agc cct cgg His Phe Arg Asp Asp Leu Arg Arg Leu Trp Pro Ser Pro Arg 845	tcc cca 2544 Ser Pro
ggg ccc cta gcc tac gct gca gcc ggt gag ctg gag aag agc Gly Pro Leu Ala Tyr Ala Ala Ala Gly Glu Leu Glu Lys Ser	tcc tgc 2592
gac tcc acc caa gcg ctg gtg gct ttc tca gat gtg gat ctt Asp Ser Thr Gln Ala Leu Val Ala Phe Ser Asp Val Asp Leu 870	att ctg 2640 l Ile Leu 880
gaa gct tct gag gct ggg cag cct cct ggg cta gag acc tat Glu Ala Ser Glu Ala Gly Gln Pro Pro Gly Leu Glu Thr Tyr 890	ggc ttc 2688
cct tca gtg acc ctc atc tcc cga cat cag ccg ggg gcc ac Pro Ser Val Thr Leu Ile Ser Arg His Gln Pro Gly Ala Th	c agg ctg 2736 r Arg Leu 0
900 gag gga aac cat ttt ata gag tct gat gga acc aag ttt gg Glu Gly Asn His Phe Ile Glu Ser Asp Gly Thr Lys Phe Gl 920 925	g aac cca 2784 y Asn Pro
caa cct ccc atg aag gga gaa ctg ctg ctg aag gca gag gg Gln Pro Pro Met Lys Gly Glu Leu Leu Leu Lys Ala Glu G 930	ga gcc act 2832 ly Ala Thr



ttg gca ggc tgt ggc tct tcc gtg ggt gga gcc ctc tgg ccc tct ggc 289 Leu Ala Gly Cys Gly Ser Ser Val Gly Gly Ala Leu Trp Pro Ser Gly 950 955 960	80
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cct gag gcc ttc tcc acc ctg cac tcc ctg gtc aag ctg gac ctg aca Pro Glu Ala Phe Ser Thr Leu His Ser Leu Val Lys Leu Asp Leu Thr 90 95	289
gac aac cag ctg acc aca ctg ccc ctg gct gga ctt ggg ggc ttg atg Asp Asn Gln Leu Thr Thr Leu Pro Leu Ala Gly Leu Gly Gly Leu Met 100 105	337
cat ctg aag ctc aaa ggg aac ctt gct ctc tcc cag gcc ttc tcc aag His Leu Lys Leu Lys Gly Asn Leu Ala Leu Ser Gln Ala Phe Ser Lys 125	385



gac agt ttc cca aaa ctg agg atc ctg gag gtg cct tat gcc tac cag Asp Ser Phe Pro Lys Leu Arg Ile Leu Glu Val Pro Tyr Ala Tyr Gln 130 140
tgc tgt ccc tat ggg atg tgt gcc agc ttc ttc aag gcc tct ggg cag 481 Cys Cys Pro Tyr Gly Met Cys Ala Ser Phe Phe Lys Ala Ser Gly Gln 155 160
tgg gag gct gaa gac ctt cac ctt gat gat gag gag tct tca aaa agg 529 Trp Glu Ala Glu Asp Leu His Leu Asp Asp Glu Glu Ser Ser Lys Arg 175
ccc ctg ggc ctc ctt gcc aga caa gca gag aac cac tat gac cag gac 577 Pro Leu Gly Leu Leu Ala Arg Gln Ala Glu Asn His Tyr Asp Gln Asp 180 180
ctg gat gag ctc cag ctg gag atg gag gac tca aag cca cac ccc agt 625 Leu Asp Glu Leu Gln Leu Glu Met Glu Asp Ser Lys Pro His Pro Ser 195 200 205
gtc cag tgt agc cct act cca ggc ccc ttc aag ccc tgt gag tac ctc 673 Val Gln Cys Ser Pro Thr Pro Gly Pro Phe Lys Pro Cys Glu Tyr Leu 210 215
ttt gaa agc tgg ggc atc cgc ctg gcc gtg tgg gcc atc gtg ttg ctc 721 Phe Glu Ser Trp Gly Ile Arg Leu Ala Val Trp Ala Ile Val Leu Leu 230 235 240
tcc gtg ctc tgc aat gga ctg gtg ctg ctg acc gtg ttc gct ggc ggg 769 Ser Val Leu Cys Asn Gly Leu Val Leu Leu Thr Val Phe Ala Gly Gly 255 245
cct gcc ccc ctg ccc ccg gtc aag ttt gtg gta ggt gcg att gca ggc 817 Pro Ala Pro Leu Pro Pro Val Lys Phe Val Val Gly Ala Ile Ala Gly 260 265 270
gcc aac acc ttg act ggc att tcc tgt ggc ctt cta gcc tca gtc gat 865 Ala Asn Thr Leu Thr Gly Ile Ser Cys Gly Leu Leu Ala Ser Val Asp 275 280 285
gcc ctg acc ttt ggt cag ttc tct gag tac gga gcc cgc tgg gag acg 913 Ala Leu Thr Phe Gly Gln Phe Ser Glu Tyr Gly Ala Arg Trp Glu Thr 290 295
ggg cta ggc tgc cgg gcc act ggc ttc ctg gca gta ctt ggg tcg gag 961 Gly Leu Gly Cys Arg Ala Thr Gly Phe Leu Ala Val Leu Gly Ser Glu 310 315
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gtc tcc tgt gtc cgg gcc tat ggg aag tcc ccc tcc ctg ggc agc gtt 1057 Val Ser Cys Val Arg Ala Tyr Gly Lys Ser Pro Ser Leu Gly Ser Val 340 345
cga gca ggg gtc cta ggc tgc ctg gca ctg gca ggg ctg gcc gcc gca 1105



Arg Ala Gly Val Leu Gly Cys Leu Ala Leu Ala Gly Leu Ala Ala Ala 360	
355	.153
	1201
gcc ctg gtg atg atg aac tcc ttc tgt ttc ctg gtc gtg gcc ggt gcc Ala Leu Val Met Met Asn Ser Phe Cys Phe Leu Val Val Ala Gly Ala 415	1249
tac atc aaa ctg tac tgt gac ctg ccg cgg ggc gac ttt gag gcc gtg Tyr Ile Lys Leu Tyr Cys Asp Leu Pro Arg Gly Asp Phe Glu Ala Val 420 425	1297
tgg gac tgc gcc atg gtg agg cac gtg gcc tgg ctc atc ttc gca gac Trp Asp Cys Ala Met Val Arg His Val Ala Trp Leu Ile Phe Ala Asp 445	1345
ggg ctc ctc tac tgt ccc gtg gcc ttc ctc agc ttc gcc tcc atg ctg Gly Leu Leu Tyr Cys Pro Val Ala Phe Leu Ser Phe Ala Ser Met Leu 450 450 460	1393
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gtg ctg ccc ctg cct gcc tgc ctc aac cca ctg ctg tac ctg ctc ttc Val Leu Pro Leu Pro Ala Cys Leu Asn Pro Leu Leu Tyr Leu Leu Phe 495 485	1489
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gac tca ggg ccc cta gcc tat gct gcg gcc ggg gag ctg gag aag agc Asp Ser Gly Pro Leu Ala Tyr Ala Ala Ala Gly Glu Leu Glu Lys Ser 515 520	1585
tcc tgt gat tct acc cag gcc ctg gta gcc ttc tct gat gtg gat ctc Ser Cys Asp Ser Thr Gln Ala Leu Val Ala Phe Ser Asp Val Asp Leu 530 535	1633
att ctg gaa gct tct gaa gct ggg cgg ccc cct ggg ctg gag acc tat Ile Leu Glu Ala Ser Glu Ala Gly Arg Pro Pro Gly Leu Glu Thr Tyr 555 560	1681
ggc ttc ccc tca gtg acc ctc atc tcc tgt cag cag cca ggg gcc ccc Gly Phe Pro Ser Val Thr Leu Ile Ser Cys Gln Gln Pro Gly Ala Pro 565 570 575	1729
agg ctg gag ggc agc cat tgt gta gag cca gag ggg aac cac ttt ggg Arg Leu Glu Gly Ser His Cys Val Glu Pro Glu Gly Asn His Phe Gly	1777



,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		- 17 -	
	580	585	590
	200		

aac ccc caa ccc tcc atg gat gga gaa ctg ctg ctg agg gca gag gga 1825 Asn Pro Gln Pro Ser Met Asp Gly Glu Leu Leu Arg Ala Glu Gly 595

1873 tet acg cca gca ggt gga ggc ttg tca ggg ggt ggc ggc ttt cag ccc Ser Thr Pro Ala Gly Gly Gly Leu Ser Gly Gly Gly Phe Gln Pro 615 610

1920 tet gge ttg gee ttt get tea cae gtg taaatateee teeceattet Ser Gly Leu Ala Phe Ala Ser His Val 630 625

tetetteece tetetteect tteetetete ecceteggtg aatgatgget gettetaaaa 1980 caaatacaac caaaactcag cagtgtgatc tatagcagga tggcccagta cctggctcca 2040 etgatcacct etetectgtg accateacca acgggtgeet ettggeetgg etttecettg 2100 geetteetea getteacett gatactggge etetteettg teatgtetga agetgtggae 2160 cagagacetg gaettttgte tgettaaggg aaatgaggga agtaaagaca gtgaaggggt 2220 ggagggttga tcagggcaca gtggacaggg agacctcaca gagaaaggcc tggaaggtga 2280 tttcccgtgt gactcatgga taggatacaa aatgtgttcc atgtaccatt aatcttgaca 2340 aaagggcggc cgctctagag gatccaagct tacgtacgcg tgcatgcgac gtcatagctc 2460 2486 ttctatagtg tcacctaaat tcaatt

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Ser Leu Pro Ala His Pro Ala Ser Leu Ala Ala Leu Ala Ala Ser Asn

Thr Thr Ala Ser Gly Lys Leu Glu Xaa Asp Thr Phe Ser Gln Leu Ser 50



Ser 65	Leu	Gln	Ala	Leu	Asp 70	Leu	Ser	Trp	Asn	Ala 75	Ile	Arg	Ser	Ile	His 80
0.5											.	T 011	7 cm	T.e11	Thr

Pro Glu Ala Phe Ser Thr Leu His Ser Leu Val Lys Leu Asp Leu Thr 90 95

Asp Asn Gln Leu Thr Thr Leu Pro Leu Ala Gly Leu Gly Gly Leu Met
100 105

His Leu Lys Leu Lys Gly Asn Leu Ala Leu Ser Gln Ala Phe Ser Lys
115 120 125

Asp Ser Phe Pro Lys Leu Arg Ile Leu Glu Val Pro Tyr Ala Tyr Gln 130

Cys Cys Pro Tyr Gly Met Cys Ala Ser Phe Phe Lys Ala Ser Gly Gln 145

Trp Glu Ala Glu Asp Leu His Leu Asp Asp Glu Glu Ser Ser Lys Arg 165 170 175

Pro Leu Gly Leu Leu Ala Arg Gln Ala Glu Asn His Tyr Asp Gln Asp 180 185 190

Leu Asp Glu Leu Gln Leu Glu Met Glu Asp Ser Lys Pro His Pro Ser 195 200 205

Val Gln Cys Ser Pro Thr Pro Gly Pro Phe Lys Pro Cys Glu Tyr Leu 210 220

Phe Glu Ser Trp Gly Ile Arg Leu Ala Val Trp Ala Ile Val Leu Leu 225 230 235 240

Ser Val Leu Cys Asn Gly Leu Val Leu Leu Thr Val Phe Ala Gly Gly

Pro Ala Pro Leu Pro Pro Val Lys Phe Val Val Gly Ala Ile Ala Gly 260 265

Ala Asn Thr Leu Thr Gly Ile Ser Cys Gly Leu Leu Ala Ser Val Asp 275

Ala Leu Thr Phe Gly Gln Phe Ser Glu Tyr Gly Ala Arg Trp Glu Thr 290 295 300

Gly Leu Gly Cys Arg Ala Thr Gly Phe Leu Ala Val Leu Gly Ser Glu 305

Ala Ser Val Leu Leu Thr Leu Ala Ala Val Gln Cys Ser Val Ser 325 330 335

Val Ser Cys Val Arg Ala Tyr Gly Lys Ser Pro Ser Leu Gly Ser Val 340

Arg Ala Gly Val Leu Gly Cys Leu Ala Leu Ala Gly Leu Ala Ala Ala 355



Pro 370	Leu	Ala	Ser	Val	Gly 375	Glu	Tyr	Gly	Ala	Ser 380	Pro	Leu	Cys	Leu
•														_

Pro Tyr Ala Pro Pro Glu Gly Gln Pro Ala Ala Leu Gly Phe Thr Val 385 390 395

Ala Leu Val Met Met Asn Ser Phe Cys Phe Leu Val Val Ala Gly Ala 415

Tyr Ile Lys Leu Tyr Cys Asp Leu Pro Arg Gly Asp Phe Glu Ala Val 420 425 430

Trp Asp Cys Ala Met Val Arg His Val Ala Trp Leu Ile Phe Ala Asp 435

Gly Leu Leu Tyr Cys Pro Val Ala Phe Leu Ser Phe Ala Ser Met Leu 450 460

Gly Leu Phe Pro Val Thr Pro Glu Ala Val Lys Ser Val Leu Leu Val 465 470 480

Val Leu Pro Leu Pro Ala Cys Leu Asn Pro Leu Leu Tyr Leu Leu Phe 495

Asn Pro His Phe Arg Asp Asp Leu Arg Arg Leu Arg Pro Arg Ala Gly
500 505 510

Asp Ser Gly Pro Leu Ala Tyr Ala Ala Ala Gly Glu Leu Glu Lys Ser 515 520 525

Ser Cys Asp Ser Thr Gln Ala Leu Val Ala Phe Ser Asp Val Asp Leu 530 535

Ile Leu Glu Ala Ser Glu Ala Gly Arg Pro Pro Gly Leu Glu Thr Tyr 555 550

Gly Phe Pro Ser Val Thr Leu Ile Ser Cys Gln Gln Pro Gly Ala Pro 575

Arg Leu Glu Gly Ser His Cys Val Glu Pro Glu Gly Asn His Phe Gly 580

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agc ctg ccg gct cat cca gcc tct ctt gct gcc cta gcg gcc tcc aac 144 Ser Leu Pro Ala His Pro Ala Ser Leu Ala Ala Leu Ala Ala Ser Asn 35 40 45
aca acc gca tct ggg aaa ttg gag ctn gac acc ttc agc cag ctg agc 192 Thr Thr Ala Ser Gly Lys Leu Glu Xaa Asp Thr Phe Ser Gln Leu Ser 50 55
tcc ctg caa gcc ctg gat ctt agc tgg aac gcc atc cgg tcc atc cac 240 Ser Leu Gln Ala Leu Asp Leu Ser Trp Asn Ala Ile Arg Ser Ile His 65 70 75 80
cct gag gcc ttc tcc acc ctg cac tcc ctg gtc aag ctg gac ctg aca 288 Pro Glu Ala Phe Ser Thr Leu His Ser Leu Val Lys Leu Asp Leu Thr 85 90 95
gac aac cag ctg acc aca ctg ccc ctg gct gga ctt ggg ggc ttg atg 336 Asp Asn Gln Leu Thr Thr Leu Pro Leu Ala Gly Leu Gly Gly Leu Met 100 105 110
cat ctg aag ctc aaa ggg aac ctt gct ctc tcc cag gcc ttc tcc aag 384 His Leu Lys Leu Lys Gly Asn Leu Ala Leu Ser Gln Ala Phe Ser Lys 115 120 125
gac agt ttc cca aaa ctg agg atc ctg gag gtg cct tat gcc tac cag 432 Asp Ser Phe Pro Lys Leu Arg Ile Leu Glu Val Pro Tyr Ala Tyr Gln 130 135 140
tgc tgt ccc tat ggg atg tgt gcc agc ttc ttc aag gcc tct ggg cag 480 Cys Cys Pro Tyr Gly Met Cys Ala Ser Phe Phe Lys Ala Ser Gly Gln 150
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ccc ctg ggc ctc ctt gcc aga caa gca gag aac cac tat gac cag gac 576 Pro Leu Gly Leu Leu Ala Arg Gln Ala Glu Asn His Tyr Asp Gln Asp



180	185	190
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			100													
ctg ga Leu A	sp (gag Glu 195	ctc Leu	cag Gln	ctg Leu	gag Glu	atg Met 200	gag Glu	gac Asp	tca Ser	aag Lys	cca Pro 205	cac His	ccc Pro	agt Ser	624
gtc c Val G 2	ag t ln (tgt Cys	agc Ser	cct Pro	act Thr	cca Pro 215	ggc Gly	ccc Pro	ttc Phe	aag Lys	ccc Pro 220	tgt Cys	gag Glu	tac Tyr	ctc Leu	672
ttt g Phe G 225	aa lu	agc Ser	tgg Trp	ggc Gly	atc Ile 230	cgc Arg	ctg Leu	gcc Ala	gtg Val	tgg Trp 235	gcc Ala	atc Ile	gtg Val	ttg Leu	ctc Leu 240	720
tcc g Ser V	tg al	ctc Leu	tgc Cys	aat Asn 245	gga Gly	ctg Leu	gtg Val	ctg Leu	ctg Leu 250	acc Thr	gtg Val	ttc Phe	gct Ala	ggc Gly 255	glå aaa	768
cct g Pro A	jcc Ala	ccc Pro	ctg Leu 260	ccc Pro	ccg Pro	gtc Val	aag Lys	ttt Phe 265	gtg Val	gta Val	ggt Gly	gcg Ala	att Ile 270	gca Ala	ggc Gly	816
gcc a Ala <i>P</i>	aac Asn	acc Thr 275	ttg Leu	act Thr	ggc Gly	att Ile	tcc Ser 280	Cys	ggc Gly	ctt Leu	cta Leu	gcc Ala 285	SCI	gtc Val	gat Asp	864
gcc (Ala 1	ctg Leu 290	acc Thr	ttt Phe	ggt Gly	cag Gln	ttc Phe 295	Ser	gag Glu	tac Tyr	gga Gly	gcc Ala 300	Arg	tgg Trp	gag Glu	acg Thr	912
ggg (Gly 1 305	cta Leu	ggc	tgc Cys	cgg Arg	gcc Ala 310	Thr	gly	tto Phe	ctg Leu	gca Ala 315	ı vaı	ctt Lev	gly ggg	tcg Ser	gag Glu 320	960
gca Ala	tcg Ser	gtg Val	ctg Lev	ctg Lev 325	ı Lev	act Thr	cto Lev	g gco ı Ala	gca Ala 330	l val	g cag L Glr	g tgo n Cys	c ago s Sei	gto Val	tcc L Ser	1008
gtc Val	tcc Ser	tgt Cys	gto Val	Arg	g gcc g Ala	tat a Tyr	ggg Gly	g aag y Lys 34!	s sei	c ccc	c tco Sei	c cto	g gg u Gly 350	y DC.	gtt Val	1056
cga Arg	gca Ala	ggg Gl _y 355	v Va.	c cta l Le	a ggo ı Gly	c tgo y Cy:	c cto s Let	u Ala	a cto a Lei	g gca	a ggg	g cto y Le 36	u Ai	c gc	c gca a Ala	1104
ctg Leu	ccc Pro	Let	g gc	c tca	a gtg r Va	g gg 1 Gl: 37	A GT	a ta u Ty	c ggg	g gc	c tc a Se 38	L PI	a ct o Le	c tg u Cy	c ctg s Leu	1152
ccc Pro 385	tac Tyr	gc Ala	g cc a Pr	a cc o Pr	t ga o Gl 39	u GI	t ca y Gl	g cc n Pr	a gc o Al	a gc a Al 39	а це	g gg u Gl	c tt y Ph	c ac e Th	c gtg r Val 400	1200
gcc Ala	cto	g gte	g at l Me	g at t Me 40	t As	c tc n Se	c tt r Ph	c tg ie Cy	t tt s Ph 41	е те	g gt u Va	.c gt il Va	g go il Al	c gg a Gl 41	t gcc y Ala .5	1248



tac atc aaa ctg tac tgt gac ctg ccg cgg ggc gac ttt gag gcc gtg 12 Tyr Ile Lys Leu Tyr Cys Asp Leu Pro Arg Gly Asp Phe Glu Ala Val 420 425	296
tgg gac tgc gcc atg gtg agg cac gtg gcc tgg ctc atc ttc gca gac 1: Trp Asp Cys Ala Met Val Arg His Val Ala Trp Leu Ile Phe Ala Asp 435 440 445	344
ggg ctc ctc tac tgt ccc gtg gcc ttc ctc agc ttc gcc tcc atg ctg 1 Gly Leu Leu Tyr Cys Pro Val Ala Phe Leu Ser Phe Ala Ser Met Leu 450 450 460	392
ggc ctc ttc cct gtc acg ccc gag gcc gtc aag tct gtc ctg ctg gtg 1 Gly Leu Phe Pro Val Thr Pro Glu Ala Val Lys Ser Val Leu Leu Val 465 470 475 480	440
	1488
aac ccc cac ttc cgg gat gac ctt cgg cgg ctt cgg ccc cgc gca ggg Asn Pro His Phe Arg Asp Asp Leu Arg Arg Leu Arg Pro Arg Ala Gly 500 505	1536
gac tca ggg ccc cta gcc tat gct gcg gcc ggg gag ctg gag aag agc Asp Ser Gly Pro Leu Ala Tyr Ala Ala Ala Gly Glu Leu Glu Lys Ser 515	1584
tcc tgt gat tct acc cag gcc ctg gta gcc ttc tct gat gtg gat ctc Ser Cys Asp Ser Thr Gln Ala Leu Val Ala Phe Ser Asp Val Asp Leu 530	1632
att ctg gaa gct tct gaa gct ggg cgg ccc cct ggg ctg gag acc tat Ile Leu Glu Ala Ser Glu Ala Gly Arg Pro Pro Gly Leu Glu Thr Tyr 560 545	1680
ggc ttc ccc tca gtg acc ctc atc tcc tgt cag cag cca ggg gcc ccc Gly Phe Pro Ser Val Thr Leu Ile Ser Cys Gln Gln Pro Gly Ala Pro 575	1728
agg ctg gag ggc agc cat tgt gta gag cca gag ggg aac cac ttt ggg Arg Leu Glu Gly Ser His Cys Val Glu Pro Glu Gly Asn His Phe Gly 580 585	1776
aac ccc caa ccc tcc atg gat gga gaa ctg ctg ctg agg gca gag gga Asn Pro Gln Pro Ser Met Asp Gly Glu Leu Leu Leu Arg Ala Glu Gly 595 600 605	1824
tct acg cca gca ggt gga ggc ttg tca ggg ggt ggc ggc ttt cag ccc Ser Thr Pro Ala Gly Gly Gly Leu Ser Gly Gly Gly Phe Gln Pro 610 615	1872
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gag ttc cct gtg gcc atc cgg acc ctg ggc aga ctg cag gaa ctg ggg Glu Phe Pro Val Ala Ile Arg Thr Leu Gly Arg Leu Gln Glu Leu Gly 20 25	96
ttc cat aac aac atc aag gcc atc cca gaa aag gcc ttc atg ggg Phe His Asn Asn Asn Ile Lys Ala Ile Pro Glu Lys Ala Phe Met Gly 35	144
aac cct ctg cta cag acg ata cac ttt tat gat aac cca atc cag ttt Asn Pro Leu Leu Gln Thr Ile His Phe Tyr Asp Asn Pro Ile Gln Phe 50 50	192
gtg gga aga tcg gca ttc cag tac ctg cct aaa ctc cac aca cta tct Val Gly Arg Ser Ala Phe Gln Tyr Leu Pro Lys Leu His Thr Leu Ser 70 75 80	240
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acc agc ctg gag atc ctg acc ctg acc cgc gca ggc atc cgg ctg ctc Thr Ser Leu Glu Ile Leu Thr Leu Thr Arg Ala Gly Ile Arg Leu Leu 100 105	336
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gac acc ttc agc cag ctg agc tcc ctg caa gcc ctg gat ctt agc tgg Asp Thr Phe Ser Gln Leu Ser Ser Leu Gln Ala Leu Asp Leu Ser Trp 165	528
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180	185	190
100		

180		185	190	
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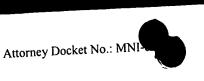


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- Val Gly Arg Ser Ala Phe Gln Tyr Leu Pro Lys Leu His Thr Leu Ser

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- Thr Ser Leu Glu Ile Leu Thr Leu Thr Arg Ala Gly Ile Arg Leu Leu 100 105 110
- Pro Ser Gly Met Cys Gln Gln Leu Pro Arg Leu Arg Val Leu Glu Leu 115 120 125
- Ser His Asn Gln Ile Glu Glu Leu Pro Ser Leu His Arg Cys Gln Lys 130 135 140
- Leu Glu Glu Ile Gly Leu Gln His Asn Arg Ile Trp Glu Ile Gly Ala 145 150 155 160
- Asp Thr Phe Ser Gln Leu Ser Ser Leu Gln Ala Leu Asp Leu Ser Trp 165 170 175
- Asn Ala Ile Arg Ser Ile His Pro Glu Ala Phe Ser Thr Leu His Ser 180 185 190
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- Ala Gly Leu Gly Gly Leu Met His Leu Lys Leu Lys Gly Asn Leu Ala 210 215
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- Leu Thr Val Phe Ala Gly Gly Pro Ala Pro Leu Pro Pro Val Lys Phe 355
- Val Val Gly Ala Ile Ala Gly Ala Asn Thr Leu Thr Gly Ile Ser Cys 370 375
- Gly Leu Leu Ala Ser Val Asp Ala Leu Thr Phe Gly Gln Phe Ser Glu 385 390 395 400
- Tyr Gly Ala Arg Trp Glu Thr Gly Leu Gly Cys Arg Ala Thr Gly Phe 405 410 415
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- Ala Val Gln Cys Ser Val Ser Val Ser Cys Val Arg Ala Tyr Gly Lys
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 440
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- Gly Ala Ser Pro Leu Cys Leu Pro Tyr Ala Pro Pro Glu Gly Gln Pro 495
- Ala Ala Leu Gly Phe Thr Val Ala Leu Val Met Met Asn Ser Phe Cys 500 505
- Phe Leu Val Val Ala Gly Ala Tyr Ile Lys Leu Tyr Cys Asp Leu Pro 525
- Arg Gly Asp Phe Glu Ala Val Trp Asp Cys Ala Met Val Arg His Val 530
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- Val Lys Ser Val Leu Leu Val Val Leu Pro Leu Pro Ala Cys Leu Asn 580 585
- Pro Leu Leu Tyr Leu Leu Phe Asn Pro His Phe Arg Asp Asp Leu Arg 595 600 605
- Arg Leu Arg Pro Arg Ala Gly Asp Ser Gly Pro Leu Ala Tyr Ala Ala 610 615
- Ala Gly Glu Leu Glu Lys Ser Ser Cys Asp Ser Thr Gln Ala Leu Val 625 630 640
- Ala Phe Ser Asp Val Asp Leu Ile Leu Glu Ala Ser Glu Ala Gly Arg 655



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•

20	125
	20

Ser His Asn Gln Ile Glu Glu Leu Pro Ser Leu His Arg Cys Gln Lys 130	115		120		123		
Leu Glu Glu Ile Gly Leu Gln Als Asia Also 155 165 gac acc ttc agc cag ctg agc tcc ctg caa gcc ctg gat ctt agc tgg Asp Thr Phe Ser Gln Leu Ser Ser Leu Gln Ala Leu Asp Leu Ser Trp 175 aac gcc atc cgg tcc atc cac cct gag gcc ttc tcc acc ctg cac tcc Asn Ala Ile Arg Ser Ile His Pro Glu Ala Phe Ser Thr Leu His Ser 180 185 190 ctg gtc aag ctg gac ctg aca gac aac cag ctg acc aca ctg cac ctg Leu Val Lys Leu Asp Leu Thr Asp Asn Gln Leu Thr Thr Leu Pro Leu 195 gct gga ctt ggg ggc ttg atg cat ctg aag ctc aaa ggg acc ctt ggc gdg actt ggg ggc ttc tcc acc gag ctg Ala Gly Leu Gly Leu Met His Leu Lys Leu Lys Gly Asn Leu Ala 210 225 235 240 ctc tcc cag gcc ttc tcc aag gac agt ttc cca aaa ctg agg atc ctg Ser Gln Ala Phe Ser Lys Asp Ser Phe Pro Lys Leu Arg Ile Leu 225 230 240 gag gtg cct tat gcc tac cag tgc tgt ccc tat ggg atg tgt gcc agc Glu Val Pro Tyr Ala Tyr Gln Cys Cys Pro Tyr Gly Met Cys Ala Ser 245 ttc ttc aag gcc ttc aaa agg cag ttg gga gct gaa gac ctt cac ctt gat Phe Phe Lys Ala Ser Gly Gln Trp Glu Ala Glu Asp Leu His Leu Asp 270 gat gag gag gtc tt ca aaa agg ccc tag gg ctc ct ctc gag cag cag cag agg gag gag gag gag ga	Ser His Asn	caa att ga Gln Ile Gl	i Gin ren	ccc agc c Pro Ser L	J	tgt cag a Cys Gln I	aaa 432 Lys
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Val Trp Ala Ile Val Leu Leu Ser val heu Cyb 1551 577 350		ro Cys Glu	tac ctc t Tyr Leu P	ne Giu sei	. IIP OIY I	tc cgc ct le Arg Le 33	·) · ·
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32
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Alloney
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Leu Asp Ala Asn Leu Ile Ser Leu Val Pro Glu Arg Ser Phe Glu Gly
145 150 155 160

Leu Ser Ser Leu Arg His Leu Trp Leu Asp Asp Asn Ala Leu Thr Glu 165 170 175

Ile Pro Val Arg Ala Leu Asn Asn Leu Pro Ala Leu Gln Ala Met Thr 180 185

Leu Ala Leu Asn Arg Ile Ser His Ile Pro Asp Tyr Ala Phe Gln Asn 195 200 205

Leu Thr Ser Leu Val Val Leu His Leu His Asn Asn Arg Ile Gln His 210 215

Leu Gly Thr His Ser Phe Glu Gly Leu His Asn Leu Glu Thr Leu Asp 235 240

Leu Asn Tyr Asn Lys Leu Gln Glu Phe Pro Val Ala Ile Arg Thr Leu 255 245

Gly Arg Leu Gln Glu Leu Gly Phe His Asn Asn Asn Ile Lys Ala Ile 265 270

Pro Glu Lys Ala Phe Met Gly Asn Pro Leu Leu Gln Thr Ile His Phe 275 280 285

Tyr Asp Asn Pro Ile Gln Phe Val Gly Arg Ser Ala Phe Gln Tyr Leu 290 295 300

Pro Lys Leu His Thr Leu Ser Leu Asn Gly Ala Met Asp Ile Gln Glu 305

Phe Pro Asp Leu Lys Gly Thr Thr Ser Leu Glu Ile Leu Thr Leu Thr 335

Arg Ala Gly Ile Arg Leu Leu Pro Ser Gly Met Cys Gln Gln Leu Pro 345

Arg Leu Arg Val Leu Glu Leu Ser His Asn Gln Ile Glu Glu Leu Pro

Ser Leu His Arg Cys Gln Lys Leu Glu Glu Ile Gly Leu Gln His Asn 370 375

Arg Ile Trp Glu Ile Gly Ala Asp Thr Phe Ser Gln Leu Ser Ser Leu 385 390 395 400

Gln Ala Leu Asp Leu Ser Trp Asn Ala Ile Arg Ser Ile His Pro Glu 410 415 Ala Phe Ser Thr Leu His Ser Leu Val Lys Leu Asp Leu Thr Asp Asn 420

Gln Leu Thr Thr Leu Pro Leu Ala Gly Leu Gly Gly Leu Met His Leu
435
440
445

Lys Leu Lys Gly Asn Leu Ala Leu Ser Gln Ala Phe Ser Lys Asp Ser 450 450

Phe Pro Lys Leu Arg Ile Leu Glu Val Pro Tyr Ala Tyr Gln Cys Cys 470 475

Pro Tyr Gly Met Cys Ala Ser Phe Phe Lys Ala Ser Gly Gln Trp Glu 495

Ala Glu Asp Leu His Leu Asp Asp Glu Glu Ser Ser Lys Arg Pro Leu 500

Gly Leu Leu Ala Arg Gln Ala Glu Asn His Tyr Asp Gln Asp Leu Asp 525

Glu Leu Gln Leu Glu Met Glu Asp Ser Lys Pro His Pro Ser Val Gln 530

Cys Ser Pro Thr Pro Gly Pro Phe Lys Pro Cys Glu Tyr Leu Phe Glu 545

Ser Trp Gly Ile Arg Leu Ala Val Trp Ala Ile Val Leu Leu Ser Val 575

Leu Cys Asn Gly Leu Val Leu Leu Thr Val Phe Ala Gly Gly Pro Ala 580

Pro Leu Pro Pro Val Lys Phe Val Val Gly Ala Ile Ala Gly Ala Asn 605

Thr Leu Thr Gly Ile Ser Cys Gly Leu Leu Ala Ser Val Asp Ala Leu 610 620

Thr Phe Gly Gln Phe Ser Glu Tyr Gly Ala Arg Trp Glu Thr Gly Leu 635

Gly Cys Arg Ala Thr Gly Phe Leu Ala Val Leu Gly Ser Glu Ala Ser 645 650 655

Val Leu Leu Thr Leu Ala Ala Val Gln Cys Ser Val Ser Val Ser 660 665

Cys Val Arg Ala Tyr Gly Lys Ser Pro Ser Leu Gly Ser Val Arg Ala 675

Gly Val Leu Gly Cys Leu Ala Leu Ala Gly Leu Ala Ala Leu Pro 690 700

Leu Ala Ser Val Gly Glu Tyr Gly Ala Ser Pro Leu Cys Leu Pro Tyr 705 710 715 720



Ala Pro Pro Glu Gly Gln Pro Ala Ala Leu Gly Phe Thr Val Ala Leu 735

Val Met Met Asn Ser Phe Cys Phe Leu Val Val Ala Gly Ala Tyr Ile 740 745 750

Lys Leu Tyr Cys Asp Leu Pro Arg Gly Asp Phe Glu Ala Val Trp Asp 755 760 765

Cys Ala Met Val Arg His Val Ala Trp Leu Ile Phe Ala Asp Gly Leu 770 780

Leu Tyr Cys Pro Val Ala Phe Leu Ser Phe Ala Ser Met Leu Gly Leu 785 790 795 800

Phe Pro Val Thr Pro Glu Ala Val Lys Ser Val Leu Leu Val Val Leu 815

Pro Leu Pro Ala Cys Leu Asn Pro Leu Leu Tyr Leu Leu Phe Asn Pro 825 830

His Phe Arg Asp Asp Leu Arg Arg Leu Arg Pro Arg Ala Gly Asp Ser 835

Gly Pro Leu Ala Tyr Ala Ala Gly Glu Leu Glu Lys Ser Ser Cys 850 855

Asp Ser Thr Gln Ala Leu Val Ala Phe Ser Asp Val Asp Leu Ile Leu 865 870 875

Glu Ala Ser Glu Ala Gly Arg Pro Pro Gly Leu Glu Thr Tyr Gly Phe

Pro Ser Val Thr Leu Ile Ser Cys Gln Gln Pro Gly Ala Pro Arg Leu 900 905 910

Glu Gly Ser His Cys Val Glu Pro Glu Gly Asn His Phe Gly Asn Pro 915

Gln Pro Ser Met Asp Gly Glu Leu Leu Leu Arg Ala Glu Gly Ser Thr 930 935 940

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acc gcc tgc ccg gcc ccc tgc cac tgc cag gag gac ggc atc atg ctg Thr Ala Cys Pro Ala Pro Cys His Cys Gln Glu Asp Gly Ile Met Leu 35 40 45	144
tct gcc gac tgc tct gag ctc ggg ctg tcc gcc gtt ccg ggg gac ctg Ser Ala Asp Cys Ser Glu Leu Gly Leu Ser Ala Val Pro Gly Asp Leu 50 55 60	192
gac ccc ctg acg gct tac ctg gac ctc agc atg aac aac ctc aca gag Asp Pro Leu Thr Ala Tyr Leu Asp Leu Ser Met Asn Asn Leu Thr Glu 65 70 75 80	240
ctt cag cct ggc ctc ttc cac cac ctg cgc ttc ttg gag gag ctg cgt Leu Gln Pro Gly Leu Phe His His Leu Arg Phe Leu Glu Glu Leu Arg 85 90 95	288
ctc tct ggg aac cat ctc tca cac atc cca gga caa gca ttc tct ggt Leu Ser Gly Asn His Leu Ser His Ile Pro Gly Gln Ala Phe Ser Gly 100 105 110	336
ctc tac agc ctg aaa atc ctg atg ctg cag aac aat cag ctg gga gga Leu Tyr Ser Leu Lys Ile Leu Met Leu Gln Asn Asn Gln Leu Gly Gly 115 120 125	384
atc ccc gca gag gcg ctg tgg gag ctg ccg agc ctg cag tcg ctg cgc Ile Pro Ala Glu Ala Leu Trp Glu Leu Pro Ser Leu Gln Ser Leu Arg 130 135 140	432
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ctg tcc tcc ctc cgc cac ctc tgg ctg gac gac aat gca ctc acg gag Leu Ser Ser Leu Arg His Leu Trp Leu Asp Asp Asn Ala Leu Thr Glu 175	528 1
atc cct gtc agg gcc ctc aac aac ctc cct gcc ctg cag gcc atg acc Ile Pro Val Arg Ala Leu Asn Asn Leu Pro Ala Leu Gln Ala Met Thi 180	576 c
ctg gcc ctc aac cgc atc agc cac atc ccc gac tac gcg ttc cag aat Leu Ala Leu Asn Arg Ile Ser His Ile Pro Asp Tyr Ala Phe Gln Ass 195 200 205	t 624 n
ctc acc agc ctt gtg gtg ctg cat ttg cat aac aac cgc atc cag ca Leu Thr Ser Leu Val Val Leu His Leu His Asn Asn Arg Ile Gln Hi 210 215	t 672 s

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tat gat aac co Tyr Asp Asn Pr 290	ro Ile Gin P	tt gtg gga he Val Gly 95	Arg ber	ca ttc cag tac la Phe Gln Tyr 00	ectg 912 Leu
cct aaa ctc c Pro Lys Leu H 305	ac aca cta t is Thr Leu S 310	ct ctg aat er Leu Asr	ggt gcc a Gly Ala M 315	tg gac atc cag et Asp Ile Glr	g gag 960 n Glu 320
	tc aaa ggc a eu Lys Gly 5 325	acc acc ago Thr Thr Se	c ctg gag a r Leu Glu I 330	tc ctg acc ctg le Leu Thr Let 33	g acc 1008 u Thr 5
Arg Ala Gly I	itc cgg ctg (:le Arg Leu :	ctc cca tc Leu Pro Se 34	1 019 1.00	gc caa cag ct Cys Gln Gln Le 350	g ccc 1056 u Pro
agg ctc cga g Arg Leu Arg \ 355	gtc ctg gaa Val Leu Glu	ctg tct ca Leu Ser Hi 360	c aat caa a s Asn Gln I	att gag gag ct Ile Glu Glu Le 365	g ccc 1104 u Pro
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cgc atc tgg (Arg Ile Trp (385	gaa att gga Glu Ile Gly 390	gct gac ac Ala Asp Th	ec ttc agc nr Phe Ser 395	cag ctg agc to Gln Leu Ser Se	cc ctg 1200 er Leu 400
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gcc ttc tcc Ala Phe Ser	acc ctg cac Thr Leu His 420	Ser Leu v	tc aag ctg al Lys Leu 25	gac ctg aca g Asp Leu Thr A 430	ac aac 1296 sp Asn
cag ctg acc Gln Leu Thr 435	aca ctg ccc Thr Leu Pro	ctg gct g Leu Ala G 440	ga ctt ggg Gly Leu Gly	ggc ttg atg c Gly Leu Met H 445	at ctg 1344 is Leu

aag Lys	ctc Leu 450	aaa Lys	gly ggg	aac Asn	ctt Leu	gct Ala 455	ctc Leu	tcc Ser	cag Gln	gcc Ala	ttc Phe 460	tcc Ser	aag Lys	gac Asp	agt Ser	1392
ttc Phe 465	cca Pro	aaa Lys	ctg Leu	agg Arg	atc Ile 470	ctg Leu	gag Glu	gtg Val	cct Pro	tat Tyr 475	gcc Ala	tac Tyr	cag Gln	tgc Cys	tgt Cys 480	1440
ccc Pro	tat Tyr	gly aaa	atg Met	tgt Cys 485	gcc Ala	agc Ser	ttc Phe	ttc Phe	aag Lys 490	gcc Ala	tct Ser	Gly ggg	cag Gln	tgg Trp 495	gag Glu	1488
gct Ala	gaa Glu	gac Asp	ctt Leu 500	cac His	ctt Leu	gat Asp	gat Asp	gag Glu 505	gag Glu	tct Ser	tca Ser	aaa Lys	agg Arg 510	ccc Pro	ctg Leu	1536
ggc Gly	ctc Leu	ctt Leu 515	gcc Ala	aga Arg	caa Gln	gca Ala	gag Glu 520	aac Asn	cac His	tat Tyr	gac Asp	cag Gln 525	gac Asp	ctg Leu	gat Asp	1584
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tgt Cys 545	Ser	cct Pro	act Thr	cca Pro	ggc Gly 550	ccc Pro	ttc Phe	aag Lys	ccc Pro	tgt Cys 555	gag Glu	tac Tyr	ctc Leu	ttt Phe	gaa Glu 560	1680
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ccc	ctg Leu	ccc Pro 595	Pro	gtc Val	aag Lys	ttt Phe	gtg Val	. Val	ggt Gly	gcg Ala	att Ile	gca Ala 605	ь Сту	gco Ala	a ac a Asn	1824
acc Thi	ttg Lev 610	Thi	gg¢ Gly	att / Ile	tco Ser	tgt Cys 615	Gl	c ctt / Lei	cta Lev	a gco a Ala	tca Ser 620	r val	gat Asp	gco Ala	c ctg a Leu	1872
aco Thi 625	c Phe	ggt Gly	caq y Gli	g tto n Phe	tct Ser 630	: Gli	g tad ı Tyr	gga Gly	a gco y Ala	c cgc a Arg 63!	j Tr	g gag p Gli	g acc	Gly	g cta y Leu 640	1920
gg	c tgo y Cys	c cgg	g gc	c act a Thi 64!	Gly	tto Phe	c cto	g gca u Ala	a gta a Vai	I Le	ı gg	g tog y Se:	g gag r Gli	g gca 1 Ala 65	a tcg a Ser 5	1968
gt: Va	g cto l Le	g ct u Le	g ct u Le 66	u Th	t cto	g gc	c gc	a gt a Va 66	T GT	g tg n Cy	c ag s Se	c gte r Va	c tc l Se: 67	L va	c tcc l Ser	2016
tg	t gt	c cg	g gc	c ta	t gg	g aa	g tc	c cc	c tc	c ct	g gg	c ag	c gt	t cg	a gca	2064

Cys Val Arg Ala Tyr Gly Lys Ser Pro Ser Leu Gly Ser Val Arg Ala 675 680 685
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gtg atg atg aac tcc ttc tgt ttc ctg gtc gtg gcc ggt gcc tac atc 2256 Val Met Met Asn Ser Phe Cys Phe Leu Val Val Ala Gly Ala Tyr Ile 740 745 750
aaa ctg tac tgt gac ctg ccg cgg ggc gac ttt gag gcc gtg tgg gac 2304 Lys Leu Tyr Cys Asp Leu Pro Arg Gly Asp Phe Glu Ala Val Trp Asp 765
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ccc ctg cct gcc tgc ctc aac cca ctg ctg tac ctg ctc ttc aac ccc 2496 Pro Leu Pro Ala Cys Leu Asn Pro Leu Leu Tyr Leu Leu Phe Asn Pro 820 825 830
cac ttc cgg gat gac ctt cgg cgg ctt cgg ccc cgc gca ggg gac tca 2544 His Phe Arg Asp Asp Leu Arg Arg Leu Arg Pro Arg Ala Gly Asp Ser 835 840 845
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gaa gct tct gaa gct ggg cgg ccc cct ggg ctg gag acc tat ggc ttc 2688 Glu Ala Ser Glu Ala Gly Arg Pro Pro Gly Leu Glu Thr Tyr Gly Phe 895 885
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Y



965

			900					905					910	<i>y</i>		
gag Glu	ggc Gly	agc Ser 915	cat His	tgt Cys	gta Val	gag Glu	cca Pro 920	gag Glu	gjå aaa	aac Asn	cac His	ttt Phe 925	Gly ggg	aac Asn	ccc Pro	2784
caa Gln	ccc Pro 930	tcc Ser	atg Met	gat Asp	gga Gly	gaa Glu 935	ctg Leu	ctg Leu	ctg Leu	agg Arg	gca Ala 940	gag Glu	gga Gly	tct Ser	acg Thr	2832
cca Pro 945	gca Ala	ggt Gly	gga Gly	ggc Gly	ttg Leu 950	tca Ser	Gly 999	ggt Gly	ggc Gly	ggc Gly 955		cag Gln	ccc Pro	tct Ser	ggc Gly 960	2880
ttg Leu	gcc Ala	ttt Phe	gct Ala	tca Ser	cac His	gtg Val										2901